TECHNICAL REVIEW DOCUMENT
For
RENEWAL TO OPERATING PERMIT 97OPWE180

Public Service Company of Colorado – Ft. St. Vrain Station
Weld County
Source ID 1230023

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May and June 2010
Revised August through December 2010

I. Purpose:

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The current Operating Permit was issued July 1, 2005. The expiration date for the permit is July 1, 2010. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted May 19, 2009, additional information submitted on June 2, 2009 and August 12, 2010, a modification application submitted on March 23, 2010, comments on the draft permit and technical review document submitted on September 16, 2010, comments on the draft permit received on October 8, 2010 during the public comment period, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at http://www.cdphe.state.co.us/ap/Titlev.html. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Source

This facility classified as an electric services facility under Standard Industrial Classification 4911. This facility consists of five (5) natural gas fired combustion turbines and three (3) heat recovery steam generators (HRSG). The capacity of the steam turbine is 330 megawatts (MW). The output rating of the entire plant varies based on ambient temperature with more generation in the winter and less generation in the summer. The facility generates approximately 965 MW (summer rating) of electricity. **The turbines are numbered as follows: T001 (turbine No.1) is the steam turbine, T002 (turbine No. 2) is the No. 1 combustion turbine, T003 (turbine No. 3) is the No. 2 combustion turbine, T004 (turbine No. 4) is the No. 3 combustion turbine, T005 (turbine No. 5) is the No. 4 combustion turbine and T006 (turbine No. 6) is the No. 5 combustion turbine.** Combustion turbines 2 and 3 each generate approximately 135 MW of electricity and each HSRG, which includes duct burners for supplemental firing, will add approximately 100 MW of electrical capacity. Combustion turbine 4, which commenced operation in April 2001, generates approximately 135 MW of electricity and the HRSG, which includes a duct burner for supplemental firing, will add approximately 100 MW of electrical capacity. These combustion turbines and HRSG combinations can be run in three modes: simple cycle (combustion turbine only), combined cycle (combustion turbine with HRSG) with no fuel fired in the duct burners and combined cycle (combustion turbine with HRSG) with fuel fired in the duct burners. In simple cycle operation, exhaust from the combustion turbine is discharged through the bypass stack. In combined cycle mode, the exhaust gas from the turbine passes through the HRSG first and then exits out the HRSG stack. Combustion turbines No. 5 and 6, which commenced operation in April 2009, each generate approximately 146 MW. Turbines 5 and 6 can only operate in simple system mode. In addition to the combustion turbines, significant emission units at this facility consist of an auxiliary boiler fueled by natural gas, one cooling water tower, one service water tower, a 500 gallon gasoline tank and cold cleaner solvent vats.

Based on the information available to the Division and provided by the applicant, it appears that no modifications to the significant emission units have occurred since the original issuance of the operating permit.

The facility is located approximately three miles north and west of Platteville, Colorado. This facility is located in an area classified as attainment for all pollutants except ozone. It is classified as non-attainment for ozone and is part of the 8-hr Ozone Control Area as defined in Regulation No. 7, Section II.A.1.

There are no affected states within 50 miles of the plant. Rocky Mountain National Park, Eagle's Nest National Wilderness Area and Rawah National Wilderness Area, Federal Class I designated areas, are within 100 kilometers of the plant.

The summary of emissions that was presented in the Technical Review Document (TRD) for the original permit issuance has been modified to more appropriately identify the potential to emit (PTE) with the addition of turbines 5 and 6. Emissions (in tons/yr) at the facility are as follows:

	Potential to Emit (PTE)						
Emission Unit	PM	PM_{10}	SO_2	NO_X	CO	VOC	HAPS
Turbine (T002)	39.4	39.4	4.7	496.1	465.4	21.4	See Table on Page 20
Turbine (T003)	39.4	39.4	4.7	496.1	465.4	21.4	
Turbine (T004)	54	54	4.7	199.1	237.9	33.1	
Turbine (T005)*	4.45	4.45	1.85	19.95	10	1.15	
Turbine (T006)*	4.45	4.45	1.85	19.95	10	1.15	
Auxiliary Boiler (B001)	0.6	0.6	0.2	32.6	27.4	1.8	
Cooling/Service Water Towers (M001)	14.9	14.9				2.4	
Total	157.2	157.2	18	1,263.8	1,216.1	82.4	18.82

*permitted emission limits are for both turbines together, emissions are assumed to be split between the 2 units.

Potential to emit for criteria pollutants is based on permitted emission limits.

The breakdown of HAP emissions for each emission unit is provided for in the table on page 20 of this document. HAPs were estimated as follows:

Turbines 2 and 3: Formaldehyde emissions from the turbines and duct burners are based on emission factors determined from performance tests conducted on these units (performance test results were multiplied by 1.7), the design heat input rate (turbine plus duct burner) and 8760 hours per year of operation. The test results were conducted while the units were in combined cycle mode with the duct burners on. Emissions of other pollutants from the turbines are based on AP-42 emission factors (Section 3.1 (dated 4/00), Table 3.1-4), except that the acetaldehyde emission factor is from the ICCR and the manganese and nickel emission factors are from FIRE, the design heat input rate of the turbine and 8760 hours per year of operation. Emissions of other pollutants from the duct burners are based on AP-42 emission factors (Section 1.4 (dated 3/98), Tables 1.4-3 and 1.4-4), except that the formaldehyde emission factor is from EPRI handbook (4/02) and the hexane emission factor is from an EPRI paper (5/00), the design heat input rate and 8760 hours per year of operation.

Turbine 4: Formaldehyde emissions from the turbine and duct burner are based on the Turbine 2 performance test (test results were multiplied by 1.7) and the permitted heat input rates for the turbine and duct burner. Emissions of other pollutants from the turbine are based on AP-42 emission factors (Section 3.1

(dated 4/00), Table 3.1-4), except that the acetaldehyde emission factor is from the ICCR and the manganese and nickel emission factors are from FIRE and the permitted heat input rate for the turbine. Emissions of other pollutants from the duct burner are based on AP-42 emission factors (Section 1.4 (dated 3/98), Tables 1.4-3 and 1.4-4), except that the formaldehyde emission factor is from EPRI handbook (4/02) and the hexane emission factor is from an EPRI paper (5/00), and the permitted heat input rate for the duct burner.

Turbines 5 and 6: HAP emissions are based on AP-42 emission factors (Section 3.1 (dated 4/00), Table 3.1-4), except that the acetaldehyde emission factor is from the ICCR and the manganese and nickel emission factors are from FIRE, the permitted fuel consumption rate and an assumed natural gas heat content of 1020 Btu/scf.

Auxiliary Boiler: HAP emissions are based on AP-42 emission factors (Section 1.4 (dated 3/98), Tables 1.4-3 and 1.4-4), except that the formaldehyde emission factor is from EPRI handbook (4/02) and the hexane emission factor is from an EPRI paper (5/00), the permitted fuel consumption rate and an assumed natural gas heat content of 1020 Btu/scf.

Cooling and Service Water Towers: HAP emissions are based on a chloroform emission factor of 0.05 lb/mmgal (from letter from Wayne C. Micheletti to Ed Lasnic, dated November 11, 1992) and the permitted water circulation rate

Note that actual emissions are typically less than potential emissions and actual emissions are shown on page 21 of this document.

MACT Requirements

Although the facility is not a major source for HAPS, the EPA has been promulgating rules for area sources (sources that are not major), those requirements that could potentially apply to this facility are discussed below:

Paint Stripping and Miscellaneous Surface Coating at Area Sources (40 CFR Part 63 Subpart HHHHHH)

As discussed in the technical review document for the August 12, 2008 revised Title V permit, these requirements do not apply for the following reasons. The Division considers that any spray coatings of motor vehicles and mobile equipment and spray application of coatings that contain the target HAP at this facility would meet the definition of facility maintenance and none of the paint stripping chemicals used at the facility contain methylene chloride.

Gasoline Dispensing Facilities (40 CFR Part 63 Subpart CCCCCC)

These requirements apply to the 500 gal gasoline storage tank at the facility and are included in the current Title V permit.

Reciprocating Internal Combustion Engines (RICE) (40 CFR Part 63 Subpart ZZZZ)

Final revisions to the RICE MACT were published in the Federal Register on March 3, 2010 and these revisions address existing (commenced construction prior to June 12, 2006) compression ignition engines at area sources. The insignificant activity list indicates that there are two emergency generators (one generator is powered by two diesel engines) and an emergency fire pump engine at the facility. Since these engines were in the July 1, 2005 Title V renewal permit, these engines are existing engines and are subject to requirements in MACT ZZZZ. Since these engines are considered emergency engines they are subject to management standards (oil and filter change and inspect air cleaners, hoses and belts). The source is required to comply with these requirements by May 3, 2013. The appropriate applicable requirements will be included in the renewal permit.

In their September 16, 2010 comments on the draft permit, the source indicated that the security generator (driven by one diesel-fired engine) has been removed from service. Therefore, only the station's emergency generator (driven by two diesel-fired engines) will be addressed in the permit.

Industrial, Commercial and Institutional Boilers at Area Sources (40 CFR Part 63 Subpart JJJJJJ)

EPA has signed off on proposed rules for industrial, commercial and institutional boilers located at area sources (the proposed rule has not been published yet in the Federal Register). Under the proposed rule gas fired boilers are not subject to the requirements in 40 CFR Part 63 Subpart JJJJJJ in accordance with § 63.11195(e)

Compliance Assurance Monitoring (CAM) requirements

The current Title V permit includes CAM requirements for Turbine 4. As indicated in the technical review document to support the first renewal of the Title V permit (issued July 1, 2005), Turbines 2 and 3 were not subject to CAM because they are not equipped with a control device (dry low NO_X combustion systems are considered inherent process equipment). Turbines 5 and 6 are also equipped with dry low NO_X combustion systems and as such they are not equipped with control devices and CAM does not apply to those turbines.

Greenhouse Gases

In 2009 and 2010, EPA issued two rules related to Greenhouse Gasses (GHG) that may affect your facility.

On October 30, 2009, EPA published a rule for the mandatory annual reporting of GHG emissions to EPA from large GHG emissions sources in 40 CFR part 98. You may be required to identify GHG emissions in future Title V permit applications. Such identification may be satisfied by including some or all of the information reported to EPA to meet the GHG reporting requirements.

III. Discussion of Modifications Made

Source Requested Modifications

The source's requested modifications were addressed as follows:

Addition of Turbines 5 and 6 - "New" Section II.8

The turbines are General Electric, Model No. 7FA, natural gas-fired combustion turbines with serial numbers 298106 and 298107. Each unit has a rated heat input of 1,467 mmBtu/hr and output of 174 MW (design) and 146 MW (site - annual average at 48.5 °F). The turbines are equipped with advanced dry low NO_X (DLN) combustion systems to reduce NO_X emissions.

Applicable Requirements: Initial approval construction permit 07WE1100 was issued for these units on February 6, 2008. A revised construction permit (07WE1100) was issued on July 24, 2008 to revise the particulate matter emission limitations. These units commenced operation in April 2009. According to the Division's database a self-certification was received on September 23, 2009. Therefore, under the provisions of Colorado Regulation No. 3, Part C, Section V.A.3, the Division will not issue a final approval construction permit and is allowing the initial approval construction permit to continue in full force and effect. A revised construction permit (07WE1100) was issued on January 28, 2010 to change the definition of startup. The appropriate applicable requirements from the initial approval construction permit have been incorporated into the permit as follows:

- This permit will expire if construction does not commence within 18 months of permit issuance (condition 1)

  These units commenced operation in April 2009, therefore, this requirement will not be included in the Title V permit.

- The permittee shall notify the Division 30 days prior to startup (condition 2)

As previously stated the units commenced operation in April 2009 and a startup notice was submitted on March 4, 2009, with a revised notice submitted May 27, 2009.

- Manufacturer, model and serial number shall be provided prior to final approval (condition 3)

  The self-certification submitted on September 23, 2009 supplied this information; therefore, this requirement will not be included in the permit.

- PSD requirements shall apply to this source at any such time that this source becomes a major modification solely by virtue of relaxation of any permit condition (condition 5)

- Major stationary source requirements for non-attainment area review shall apply to this source at any such time that this source becomes a major modification solely by virtue of relaxation of any permit condition (condition 6)

  These conditions will not be included in the operating permit, since no actual requirements apply, unless certain modifications to the permit conditions for these turbines are made. Although this requirement will not be included in the permit, future modifications that allow emissions from these units to exceed the significance levels will result in the application of PSD review and/or non-attainment area review.

- Except as provided for below, opacity emissions shall not exceed 20% (condition 7, Reg 1, Section II.A.1)

- Under certain conditions, opacity emissions shall not exceed 30% (condition 8, Reg 1, Section II.A.4)

- RACT requirements for NO_X emissions (condition 9):

  Note that as indicated in the preliminary analysis for the original construction permit, RACT does not apply for VOC because at the time of initial construction permit issuance, VOC was not listed in Reg 3, Part B, Section III.D.2.a and Reg 7 was only applicable to the Denver 1-hr ozone attainment/maintenance area and any nonattainment area for the 1-hr ozone standard.

- Both turbines together are subject to the following fuel use limits (condition 10)

  Natural Gas consumption, in mmscf, shall not exceed the following limitations:

Period	1st Month of Operation	1st 2 Months of Operation	1st 3 Months of Operation	1st 12 Months of Operation	Annual (12-Month Rolling Total)
	1089	1,633.5	2,178	2,178	2,178

The monthly limits apply for the first twelve months of operation. Since the turbines have been operating for more than one year, the monthly limits will not be included in the permit.

- Both turbines together are subject to the following emission limitations (condition 11)

Period / Pollutant	1st Month of Operation	1st 2 Months of Operation	1st 3 Months of Operation	1st 12 Months of Operation	Annual (12-Month Rolling Total)
PM	4.45	6.68	8.9	8.9	8.9
PM_{10}	4.45	6.68	8.9	8.9	8.9
SO_2	1.85	2.77	3.7	3.7	3.7
NO_X	19.95	29.93	39.9	39.9	39.9
CO	10.0	15.0	20.0	20.0	20.0
VOC	1.15	1.73	2.3	2.3	2.3

The monthly limits apply for the first twelve months of operation. Since the turbines have been operating for more than one year, the monthly limits will not be included in the permit.

- NO_X emissions from any insignificant activities associated with the two new turbines shall be included in assessing compliance with the NO_X limit of 39.9 tons/yr (condition 12)

- Particulate matter emissions shall not exceed 0.1 lb/mmBtu (condition 13, Reg 1, Section III.A.1.c)

- **State-only requirement:** new source performance standards for fuel burning equipment in Reg 6, Part B, Section II – includes opacity (20%) and SO_2 requirements (0.35 lb/mmBtu) (Condition 14):

- The turbines are subject to the requirements in NSPS Subpart KKKK (Standards of Performance for Stationary Gas Combustion Turbines for Which Construction is Commenced After February 18, 2005) and NSPS Subpart A (General Provisions) (condition 16)

  NSPS KKKK requirements include NO_X emission and fuel sulfur limitations, as well as monitoring requirements.

With respect to the monitoring requirements, NSPS KKKK allows sources to monitor compliance with the NO_X limits using a NO_X CEMS. The CEMS can either meet the requirements in 40 CFR Part 60 or 40 CFR Part 75 and since the turbines are subject to the Acid Rain requirements, the NO_X CEMS are required to meet the requirements in Part 75. Therefore the source will follow the Part 75 requirements. To that end, the Division has not included the requirements in § 60.4345(b) (valid hour definition under Part 60), § 60.4350(a) (reduce to hourly averages per § 60.13(h)) and § 60.4350(b) (calculating hourly emissions). In addition, since the source is required to use a Part 75 NO_X CEMS under the Acid Rain Program and the construction permit requires the use of a Part 75 NO_X CEMS, the requirements in §§ 60.4345(a) (CEMS), (c) (fuel flowmeter) and (e) (QA/QC plan) will not be included; however, the permit will note that the RATA will be conducted on a lb/mmBtu basis in accordance with § 60.4345(a). In addition, the Division will include the language in § 60.4350(d), which states that only quality assured data shall be used to identify excess emissions.

Note that the general provision for notification of construction, initial startup and CEMS demonstration, as well as the performance test requirements, will not be included in the permit as these requirements have been completed.

- Continuous emission monitoring system (CEMS) requirements for NO_X and CO emissions (condition 17)

- Performance tests shall be conducted for PM, NO_X, CO and VOC (condition 17)

  Performance tests were conducted on these units on May 20-21, 2009. Therefore this requirement will not be included in the permit.

- Within 180 days after issuance of this permit, compliance with these conditions shall be demonstrated (condition 18)

  A self-certification was submitted on September 23, 2009; therefore, this requirement will not be included in the permit.

- Prior to issuance of final approval, the applicant shall submit an operating and maintenance plan and shall follow the Division-approved operating and maintenance plan (condition 19)

  An operating and maintenance plan was submitted with the self-certification on September 23, 2009. The appropriate requirements from the operating and maintenance plan will be incorporated into the Title V permit.

- An application to modify the Title V permit shall be submitted within one year of commencing operation (condition 20).

  The Title V renewal application (submitted on May 19, 2009) requested that the provisions for construction permit 07WE1100 be incorporated into the Title V permit and a modification application was submitted on March 23, 2010 requesting that construction permit 07WE1100 be incorporated into the Title V permit. Since this requirement has been completed, it will not be included in the construction permit.

- APEN reporting requirements (condition 21)

  The APEN reporting requirements will not be identified in the permit as a specific condition but are included in Section V (General Conditions) of the permit, condition 22.e.

Although not specifically identified in Colorado Construction Permit 07WE1100, these turbines are subject to the following applicable requirements:

- Sulfur dioxide emissions shall not exceed 0.35 lbs/mmBtu, on a 3-hour rolling average (Reg 1, Section VI.B.4.c.(ii) and VI.B.2)

- These units are subject to the Acid Rain requirements as follows:

  - Allocated SO_2 allowances are listed in 40 CFR Part 73.10(b), however, since this is a new unit, no allowances were allocated. SO_2 allowances must be obtained per 40 CFR Part 73 to cover SO_2 emissions for the particular calendar year.
  - There are no NO_X emission limitations since this unit is not a coal-fired boiler.
  - Acid rain permitting requirements per 40 CFR Part 72.
  - Continuous emission monitoring requirements per 40 CFR Part 75.
  - This source is also subject to the sulfur dioxide allowance system (40 CFR Part 73) and excess emissions (40 CFR Part 77).

Streamlining of Applicable Requirements

Opacity

The turbines are subject to the Reg 1 20% opacity requirement and the Reg 1 30% opacity requirement for certain specific operational activities. The Reg 1 20% opacity requirement applies at all times, except for certain specific operating conditions under which the Reg 1 30% opacity requirement applies. The turbines are also subject to the state-only Reg 6, Part B 20% opacity requirement. Reg 6, Part B, Section I.A, adopts, by reference, the 40 CFR Part 60 Subpart A general provisions. 40 CFR Part 60 Subpart A § 60.11(c) specifies that the opacity

requirements are not applicable during periods of startup, shutdown and malfunction. The Reg 1 20%/30% requirements are more stringent than the Reg 6 Part B opacity requirements during periods of startup, shutdown and malfunction. While the Reg 6, Part B 20% opacity requirement is more stringent during fire building, cleaning of fire boxes, soot blowing, process modifications and adjustment or occasional cleaning of control equipment. Therefore, since no one opacity requirement is more stringent than the other at all times, all three opacity requirements are included in the operating permit. See the grid on page 22 for a clarified view on the opacity requirements and their relative stringency.

SO_2

The turbines are subject to the Regulation No. 1 and No. 6, Part B SO_2 standards. The SO_2 requirements in both Reg 1 and Reg 6, Part B are the same standard (0.35 lb/MMBtu). The Regulation No. 6, Part B requirement is a state-only requirement. The turbines are also subject to SO_2 requirements in NSPS Subpart KKKK. Under the NSPS, the source may choose to meet either an outlet emission limitation or a limitation on the potential SO_2 emissions in the fuel. The limit on the potential SO_2 emissions in the fuel is 0.060 lb/MMBtu, which is lower than the Reg 1 and Reg 6 SO_2 limit of 0.35 lb/MMBtu. Therefore, the Reg 1 SO_2 limit will be streamlined in favor of the NSPS Subpart KKKK limit on potential SO_2 emissions in the fuel.

These turbines are also subject to the Acid Rain SO_2 requirements. Sources subject to Acid Rain must hold adequate SO_2 allowances to cover annual emissions of SO_2 (1 allowance = 1 ton per year of SO_2) for a given unit in a given year. The number of allowances can increase or decrease for a unit depending on allowance availability. Allowances are obtained through EPA, other units operated by the utility or the allowance trading market and compliance information is submitted (electronically) to EPA. Pursuant to Regulation No. 3, Part C, Section V.C.1.b, if a federal requirement is more stringent than an Acid Rain requirement, both the federal requirement and the Acid Rain requirement shall be incorporated into the permit and shall be federally enforceable. For these reasons, the Acid Rain SO_2 requirements have not been streamlined out of the permit. The source will have to demonstrate compliance with the Acid Rain SO_2 requirements and the NSPS KKKK SO_2 requirements. Note that the Acid Rain SO_2 allowances appear only in Section III (Acid Rain Requirements) of the permit.

NO_X

The turbines are subject to a NO_X RACT limit of 9 ppm at 15% O_2, on a 1-hr average, except that during periods of combustion tuning and testing, NO_X is limited to 100 ppmvd @ 15% O_2, on a 1-hr average and an NSPS KKKK limit of 15 ppmvd at 15% O_2, on a 4-hr rolling average. Neither the NO_X RACT limit, nor the NSPS KKKK NO_X limit apply during periods of startup and shutdown,

however, those periods of excess emissions during periods of startup, shutdown and malfunctions under which the NSPS KKKK limits are exceeded must be identified in the excess emission reports. The NO_X RACT limit is more stringent than the NSPS KKKK limit, except during periods of combustion tuning and testing when the NSPS KKKK limit may be more stringent. Given the difference in averaging times (4-hr for NSPS and 1-hr for RACT) it is not clear which is more stringent. Therefore, since the relative stringency cannot be determined both the RACT and NSPS KKKK limits will be included in the permit.

NO_X Monitoring Requirements

The turbines are subject to several types of monitoring requirements. The construction permit requires that the stacks be equipped with CEMS to monitor and record NO_X emissions and the construction permit requires that the NO_X CEMS meet the requirements in 40 CFR Part 75. The turbines are also subject to the Acid Rain requirements and as such are required to monitor NO_X emissions in accordance with the requirements in 40 CFR Part 75. Finally, the turbines are subject to NSPS KKKK which allows sources to monitor compliance with the NO_X limits using a NO_X CEMS and NSPS KKKK allows sources to use a CEMS and fuel flowmeter that meets the requirements in Part 75. Therefore, since all of the CEMS requirements specify that the NO_X CEMS meet the requirements of Part 75, no streamlining of requirements is necessary.

SO_2 Monitoring Requirements

The source has opted to follow the limit of potential SO_2 emissions in the fuel and with respect to that limitation the NSPS does not require SO_2 monitoring, provided that the source makes that determination in accordance with the procedures in § 60.4365. The procedures in this section specify the use of a current valid purchase contract, tariff sheet or transportation contract or representative sampling consistent with the requirements in section 2.3.1.4 of Part 75 Appendix D. Since these provisions are consistent with the Part 75 requirements (section 2.3.1.4 allows the pipeline quality natural gas demonstration to be based on the purchase contract or tariff sheet), to which these units are already subject to no streamlining is required.

Emission Factors

The source will be monitoring compliance with the NO_X, CO and SO_2 emission limitations using their continuous monitoring systems. NO_X and CO are measured using CEMS and SO_2 is monitored using the continuous monitoring system required by 40 CFR Part 75 Appendix D, which requires an in-line fuel flow meter to measure the hourly consumption of natural gas and bases emissions on the heat input and a default emission factor of 0.0006 lbs/mmBtu.

The emission limits in the construction permit are based on manufacturer's estimates for PM and PM_{10} and AP-42 (Section 3.1 (dated 4/00), Table 3.1-2a) for VOC. However, stack tests were conducted for PM (including condensibles) and VOC emissions and the permit will specify that the emission factors from those tests be used to estimate emissions.

Monitoring Plan

The source will be required to monitor compliance with the NO_X and CO annual and NO_X RACT emission limitations using the CEMS. Compliance with the annual SO_2 emission limits will be monitored using the continuous monitoring system required by 40 CFR Part 75 Appendix D. Compliance with the annual PM, PM_{10} and VOC emission limitations shall be monitored using emission factors and the heat input to the turbines.

Compliance with the various short term PM and SO_2 requirements and the opacity requirements shall be presumed, in the absence of credible evidence to the contrary, since only natural gas is used as fuel in the turbines.

Other Modifications

In addition to the source requested modifications, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments to the Ft. St. Vrain Renewal Operating Permit. These changes are as follows:

Page Following Cover Page

- The monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

Section I – General Activities and Summary

- The description in Condition 1.1 was revised to include turbines 5 and 6, as well as the 500 gal gasoline storage tank, the cold cleaner solvent vats and three diesel fired engines.

- Changed the citation for the definition of 8-hour ozone control area in Condition 1.1.

- Added construction permit number 07WE1100 to the list in Condition 1.3.

- Condition 4.1 (Accidental Release Prevention Program (112(r)) was revised to indicated that the facility was not subject to the 112(r) provisions. In their September 16, 2010 comments and in a September 16, 2010 follow-up e-mail, the source indicated that the requirements no longer applied.

- Removed the third column labeled "Facility ID" from the Table in Condition 6.1, as the ID number is the same as that in the first column. The first column was relabeled "Emission Unit No./Facility ID".

- Added a column to the Table in Condition 6.1 for the startup date of the equipment. In addition, turbines 5 and 6 and the cold cleaner solvent vats were added to the table.

Section II.1 & 2

- Revised the monitoring requirements for the NSPS Da opacity limits (Conditions 1.16 and 2.15) to include the specific opacity monitoring requirements in NSPS Da. Revisions were made to NSPS Da on January 28, 2009 to allow alternatives for using a COMS. Previous versions of NSPS Da did not require sources that burned only natural gas as fuel to install and operate a COMS; however, this exception was removed in the January 28, 2009 revisions. Under the January 28, 2009 revisions sources that are subject to NSPS Da and burn natural gas as fuel must either install a COMS or use the alternative methods provided (i.e. Method 9 observations). Frequency of Method 9 observations are annual when no visible emissions are observed and as such it is expected that frequency of Method 9 observations would be annually.

- The compliance demonstration methods for the NO_X and CO BACT limits in Condition 1.2.1, 1.3.1, 2.5.1 and 2.6.1 have been revised in order to be consistent with current permits. At the time these units were permitted, the Division allowed any clock hour that included any startup or shutdown time to be compared to the startup and/or shutdown BACT limit. However, since the CEMS can be programmed to average only startup and/or

shutdown time together the Division has moved away from this practice. Therefore the permit has been revised to allow only startup and/or shutdown time to be averaged together and compared to the startup and/or shutdown BACT limits.

As requested by the source during the public comment period (comments received October 8, 2010), the Division has provided the source with 60 days following renewal permit issuance to make the changes to the data acquisition and handling system for the new compliance demonstration methods.

- The definition of startup in Condition 1.2.1.6 was revised to specify that startup begins when fuel is first fired in the turbines and ends when the turbine reaches Mode 6 operation plus 15 minutes. In their September 16, 2010 comments on the draft permit and technical review document, the source requested the change to allow for the CEMS to settle after Mode 6 operation is initially reached. In addition, the September 16, 2010 comments requested changes to the startup definition with regards to how the end of startup (Mode 6 operation) is documented and stored.

- Removed the paragraph in Condition 2.5.1 that specified that the data acquisition and handling system would be revised within 30 days of revised permit issuance [August 12, 2008] since this action has been completed.

- Revised the language in Condition 1.12 to specify that performance tests be conducted every five years, rather than within 18 months of expiration of the permit term as this provides a more definitive time frame for the tests.

- Condition 1.6.4.1 was revised to include the PM and PM10 emission factors from the latest performance test in the permit. The source requested this change in their September 16, 2010 comments on the draft permit.

Section II.5 – Continuous Emission Monitoring Systems (CEMS)

- Revised conditions 5.1.1 and 5.1.3 to indicate that ppmvd values shall be corrected to 15% O_2.

- Removed the last sentence in Condition 5.2.1.1, since this relates to COMS and since the units burn natural gas as fuel a COMS is not required as specified in § 75.14(c)

- Condition 5.3 will be revised to be more consistent with more recently issued Title V permits for natural gas fired combustion turbine electric generating stations.

Section II.6 – Gasoline Storage Tank

Colorado Regulation No. 7 was revised on December 12, 2008 (effective January 30, 2009) to cover all ozone nonattainment areas (previously Reg 7 applied to the Denver 1-hr ozone attainment maintenance area and to any non-attainment area for the 1-hr ozone standard) and as a result the requirements in Colorado Regulation No. 7, Section VI.B.3 potentially apply to the gasoline storage tank. However, since the storage tank is less than 550 gallons the tank is exempt from the requirements in Section VI.B.3 as specified in Section IV.B.3.b.(i).

In addition, the following note was added under the summary table "Note that this emission unit is exempt from the APEN reporting requirements in Regulation No.3, Part A and the construction permit requirements in Regulation No. 3, Part B."

"New" Section II.7 – Cold Cleaner Solvent Vats

Solvent cold cleaners are included in the insignificant activity list in the current Title V permit. However, as discussed previously, Colorado Regulation No. 7 was revised to cover all ozone nonattainment areas and as such the solvent cold cleaners are subject to requirements in Colorado Regulation No. 7, Section X. Although emissions from the solvent vats are below the APEN de minimis level and therefore exempt from both APEN reporting and construction permit requirements, under the "catch-all" provisions in Regulation No. 3, Part C, Section II.E (2nd paragraph) the solvent vats cannot be considered insignificant activities because they are subject to specific requirements in Regulation No. 7. Since the solvent vats cannot be considered insignificant activities, they will be included in the Operating Permit as significant emission units.

The applicable requirements from Regulation No. 7 for these units are as follows:

- Transfer and storage of waste solvent and used solvent (Reg 7, Sections X.A.3 and 4)

- Solvent Cold Cleaner Requirements (Reg 7, Section X.B)

    - Control Equipment - covers, drainage, labeling and spray apparatus requirements (Reg 7, Section X.B.1)
    - Operating Requirements (Reg 7, Section X.B.2)

"New" Section II.9 – Emergency Compression Ignition Engines

There are three engines included in the insignificant activity list that are considered insignificant under either the provisions in Colorado Regulation No. 3, Part C, Sections II.E.3.nnn (emergency generators) or xxx (stationary internal combustion engines). However, under the "catch-all" provisions in Regulation No. 3, Part C, Section II.E, sources that are subject to any federal or state applicable requirement, such as National Emission Standards for Hazardous Air

Pollutants (NESHAPs), may not be considered insignificant activities. EPA promulgated National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines on March 3, 2010 which apply to these engines; therefore, they can no longer be considered insignificant activities. Although the units cannot be considered insignificant activities, since the Division has not adopted either the January 18, 2008 or March 3, 2010 revisions to the RICE MACT, both of which address area sources, the engines are still exempt from APEN reporting and minor source construction permit requirements.

Engine descriptions are as follows:

Two (2) Caterpillar, Model No. SP321P00, Serial No. 126906 and 126907, diesel-fired engines, each Rated at 1,800 hp, with a combined fuel rate of 200 gal/hr (27.4 mmBtu/hr, based on a diesel fuel heat content of 137,000 Btu/gal). The engines are run together to drive an emergency generator. The engines must run together, they cannot run independent of each other.

One (1) Cummins, Model No. 6BTA5.963, Serial No. 46927201, diesel-fired engine, Rated at 255, with a fuel rate of 3 gal/hr (0.41 mmBtu/hr, based on a diesel fuel heat content of 137,000 Btu/gal)

The appropriate applicable requirements for these engines are as follows:

- Except as provided for below, visible emissions shall not exceed 20% opacity (Reg 1, Section II.A.1)

- Visible emissions shall not exceed 30% opacity, for a period or periods aggregating more than six (6) minutes in any sixty (60) minute period, during fire building, cleaning of fire boxes, soot blowing, start-up, process modifications, or adjustment or occasional cleaning of control equipment, when burning coal (Reg 1, Section II.A.4)

  Based on engineering judgment, the Division believes that the operational activities of fire building, cleaning of fire boxes and soot blowing do not apply to diesel engines. In addition, since these engines are not equipped with control equipment the operational activities of adjustment or occasional cleaning of control equipment also do not apply to the engines. Finally, based on engineering judgment, it is unlikely that process modifications will occur with these emergency engines. Therefore, for these units the 30% opacity provision only applies during startup.

- SO_2 emission shall not exceed 0.8 lbs/mmBtu (Reg 1, Section VI.B.4.b.(i)).

- 40 CFR Part 63 Subpart ZZZZ requirements – management practices (oil and filter change, inspect air cleaner and inspect hoses and belts)

- 40 CFR Part 63 Subpart A requirements

  Since these engines are not subject to any emission limitations, monitoring requirements, notification and reporting requirements the requirements in §§ 63.7, 63.8, 63.9 and 63.10 do not apply. In addition, since these emission units are existing the requirement in § 63.5 (preconstruction review and notification requirements) do not apply. Finally, Table 8 of Subpart ZZZZ indicates that operation and maintenance requirements in 63.6(e) do not apply. Therefore, the permit will only include the prohibition and circumvention requirements in § 63.4.

Since these units are not subject to APEN reporting or minor source construction permit requirements, the permit will not include any requirements for calculating emissions.

Section III – Acid Rain Permit

- Turbines 5 and 6 were added.

- Revised the table to include calendar years corresponding to the relevant permit term for the renewal. Note that all tables were included into one table.

- Removed the statement indicating that the source is not required to hold allowances until 2000 for Turbines 2 and 3 as this is no longer relevant. In addition, the first footnote under the table for Turbine 4 was removed as it is no longer relevant.

- Minor changes were made to the standard requirements, based on changes made to 40 CFR Part 72 § 72.9.

Section IV – Permit Shield

- Removed Colorado Regulation No. 7 (except for Section V, Paragraphs VI.B.1 & 2 and Subsection VII.C) from the permit shield as a non-applicable requirement (Section III.1). Colorado Regulation No. 7 has been revised to apply to any nonattainment area for the 8-hr ozone standard.

Section V – General Conditions

- Added a version date to the General Conditions.

- The title for Condition 6 was changed from “Emission Standards for Asbestos” to “Emission Controls for Asbestos” and in the text the phrase “emission standards for asbestos” was changed to “asbestos control”.

- General Condition 29 was revised by reformatting and adding the provisions in Reg 7, Section III.C as paragraph e.

Appendices

- As discussed previously, the solvent cold cleaners, emergency generators and emergency fire water pump were removed from the insignificant activity list in Appendix A and are included in Section II of the permit.

- In their September 16, 2010 comments on the draft permit, the source indicated that tanks T-7802 (500 gal security day tank) and T-8403 (20,000 gal underground tank storing diesel fuel) had been removed from service; therefore, these tanks were removed from the insignificant activity list in Appendix A.

- Included Turbines 5 and 6 and the cold cleaner solvent vats in the tables in Appendices B and C.

- Based on an e-mail submitted on December 16, 2010, the correlation equations for Turbines 2 and 3 were corrected in Appendix H.

PSCo – Ft. St. Vrain – Total HAP Emissions (tons/yr)

Emission Unit	formaldehyde	acetaldehyde	toluene	benzene	acrolein	xylene	chloroform	hexane	dichlorobenzene	nickel	cadmium	manganese	chromium	Total
Unit 2 - turbine	2.33	0.49	0.70	0.06	0.03	0.34				0.62		0.43		5.00
Unit 2 - DB			0.01	4.06E-03				8.31E-04	2.32E-03	4.06E-03	2.13E-03		2.71E-03	0.02
Unit 3 - turbine	1.48	0.55	0.78	0.07	0.04	0.38				0.69		0.48		4.48
Unit 3 - DB			0.01	4.06E-03				8.31E-04	2.32E-03	4.06E-03	2.13E-03		2.71E-03	0.02
Unit 4 - turbine	2.42	0.55	0.78	0.07	0.04	0.39				0.69		0.48		5.43
Unit 4 - DB			0.01	3.25E-03				6.66E-04	1.86E-03	3.25E-03	1.70E-03		2.17E-03	0.02
Units 5 & 6	0.79	0.10	0.14	1.33E-02	0.01	0.07				1.28E-01		0.09		1.34
B001	0.14		0.00	6.84E-04				1.40E-04	3.91E-04	6.84E-04	3.58E-04		4.56E-04	0.14
M001							2.37							2.37
Total	7.15	1.69	2.43	0.23	0.12	1.18	2.37	2.47E-03	6.89E-03	2.14	6.31E-03	1.48	8.03E-03	18.82

PSCo – Ft. St. Vrain – Actual Emissions (tons/yr)

Unit	PM	PM_{10}	SO_2	NO_X	CO	VOC	HAPs	Ammonia
Turbine (T002)	32.96	32.96	3.5	155.79	15.55	15.21	2.6	
Turbine (T003)	33.51	33.51	3.6	172.81	48.12	12.32	2.64	
Turbine (T004)	27.59	27.59	3.54	70.26	28.26	10.9	2.62	12.3
Auxiliary Boiler	0.23	0.23	0.07	12	10.08	0.66		
Cooling/Service Water Towers	3	3				2.3		
Turbine (T005)	4.27	4.27	0.33	16.8	6.6	1.10	0.37	
Turbine (T006)	3.41	3.41	0.25	13.39	8.5	0.88	0.3	
Total	104.97	104.97	11.29	441.05	117.11	43.37	8.53	12.3

actual emissions from turbines 5 and 6 based on APENS submitted 3/23/10 (2009 data)
actual emsisions from auxiliary boiler, turbine 2, turbine 3 and turbine 4 are from APENS submitted 4/30/09 (2008 data)
actual emissions from the cooling/service water towers are from APEN submitted 4/13/05 (2004 data)

Opacity Streamlining Grid

Reqmt Source	Normal	Start-up	Shutdown	Malfunction	Fire Building	Cleaning of Fire Boxes	Soot Blowing	Process Modifications	Adjustment of Control Equipment
Reg 1 Sections II.A.1 & 4	20%	30% with one 6 minute interval in excess of 30% per hour	20%	20 %	30% with one 6 minute interval in excess of 30% per hour	30% with one 6 minute interval in excess of 30% per hour	30% with one 6 minute interval in excess of 30% per hour	30 % with one 6 minute interval in excess of 30% per hour	30% with one 6 minute interval in excess of 30% per hour
Reg 6, Part B, Section II.C.3 **- State Only**	20%	No standard[1]	No standard[1]	No standard[1]	**20%**	**20%**	**20%**	**20%**	**20%**

[1]Although the opacity standards are not applicable during start-up, shutdown and malfunction 40 CFR ' 60.7(c) (2) requires the source to report each period of excess emissions that occurs during startups, shutdowns, and malfunctions, the nature of the malfunction and the corrective action taken or preventative measures adopted.

* Shaded regions are the most stringent **Federal** requirements

** Values in bold are the most stringent **State-only** requirements however **federal** requirements cannot be streamlined out of the permit due to more stringent **state-only** requirements